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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,988	10/31/2003	Brian M. Sager	NSL-014	8858

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EXAMINER	
PATTERSON, MARC A	

ART UNIT	PAPER NUMBER
1772	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/698,988	SAGER ET AL.	
	Examiner	Art Unit	
	Marc A. Patterson	1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-17,19-36 and 38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-17,19-36 and 38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

WITHDRAWN REJECTIONS

1. The 35 U.S.C. 102(b) rejection of Claim 36 as being anticipated by Brinker et al (U.S. Patent No. 6,264,741 B1), of record on page 2 of the previous Action, is withdrawn.

REPEATED REJECTIONS

2. The 35 U.S.C. 112, first paragraph rejection of Claims 12, 16 – 17 and 36, of record on page 2 of the previous Action, is repeated.

3. The 35 U.S.C. 112, first paragraph rejection of Claim 27, of record on page 2 of the previous Action, is repeated.

NEW REJECTIONS

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 12 – 17 and 19 – 35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The phrase 'a total number of layers of organic polymer and layers of organic

material is at least 100 so that the barrier film has a permeability to water vapor of less than about 0.01 g/m^2/day' is not disclosed in the original specification.

6. Claims 36 and 38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The phrase 'chemical backbones condense into a dense, stable material' is not disclosed in the original specification. The phrase 'in an amount sufficient to create a polymer with tuned hydrophobicity' is also not disclosed; page 4, lines 3 – 15 discloses that the incorporation of ions creates tuned hydrophobicity.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 36 and 38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase 'chemical backbones condense' is indefinite as the meanings of the three terms in the phrase are unclear. The term "dense" in claim 36 is a relative term which renders the claim indefinite. The term "dense" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The term "stable" in claim 36 is a relative term which renders the claim indefinite. The term "stable" is not

defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 12 – 21, 23 – 25, 27 – 30, 34 – 36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brinker et al (U.S. Patent No. 6,264,741 B1) in view of Dams (European Patent No. 1225188).

With regard to Claims 12 – 13, 16 – 19, 25, 28 – 30, 34 – 36 and 38, Brinker et al discloses an inorganic / organic (column 3, lines 9 – 10) nanolaminate (column 3, line 30) film (column 3, line 66) which has a plurality of layers of an inorganic material (silicate layers, therefore discrete layers comprising multiple layers or lamellae and consisting of silicate and having a different composition from a polymer layer; column 4, line 30) and a plurality of layers each consisting of an organic polymer (column 4, lines 63 – 64), therefore hydrophobic, wherein the layers of organic polymer alternate with the layers of inorganic material (column 3, lines 15 – 20) wherein the adjacent layers of the film are covalently bonded layers characterized by direct organic polymer – inorganic material covalent bonds (column 5, lines 33 – 35); the inorganic material therefore presents a long and tortuous path to an underlying substrate (tortuous path;

column 5, lines 13 – 15); the organic material is hydrophobic (column 3, lines 15 – 20) and the film is a coating (column 3, line 51); the film is therefore a barrier film; the film comprises a hydrophobic compound (column 4, lines 20 – 25), and therefore has a tuned hydrophobicity that decreases the permeability of the film relative to a film that is hydrophilic; the film has between 100 and 1000 layers (column 3, line 44 – 46); Brinker et al also disclose self – assembly of nanostructures (column 3, lines 3 – 8); Brinker et al also disclose micelle formation and incorporation of polymer precursors into the micellar interiors (column 5, lines 15 – 24). Brinker et al fail to disclose layers that contain superhydrophobic material and comprise fluoroalkylsilane.

Dams teaches a monomer comprising fluroalkylsilane (paragraph 0008), therefore superhydrophobic, for a coating (paragraph 0052) for the purpose of obtaining a coating that is oil repellent (paragraph 0011). One of ordinary skill in the art would therefore recognize the advantage of providing for the monomer of Dams et al in Brinker et al, which comprises a coating, depending on the desired use of the end product.

It therefore would have been obvious for one of ordinary skill in the art to have provided for a superhydrophobic layer comprising fluoroalkylsilane in Brinker et al in order to obtain a layer that is oil repellent as taught by Ogawa et al.

With regard to Claim 14, Brinker et al disclose a nanolaminate, as stated above, and therefore disclose layers of organic material having a thickness of 1 nm.

With regard to Claim 15, the film disclosed by Brinker et al is transparent (column 3, line 50).

With regard to Claims 20 – 21, the layers disclosed by Brinker et al are hydrophobic, as stated above, and therefore comprise layers made from polymer precursors to which a hydrophobic group comprising methyl has been added.

With regard to Claims 22, 26 and 31 – 33, Brinker et al disclose a Gemini surfactant (column 4, lines 45 – 46) and tubules (column 8, line 6) and layers which are self assembled (column 5, lines 7 – 31).

With regard to Claims 23 – 24 and 27, the film disclosed by Brinker et al is utilized a coating, as stated above; Brinker et al therefore disclose an article of manufacture having the film disposed on the surface.

ANSWERS TO APPLICANT'S ARGUMENTS

11. Applicant's arguments regarding the 35 U.S.C. 112, first paragraph rejection of Claims 12, 16 – 17 and 36, 35 U.S.C. 112, first paragraph rejection of Claim 27, 35 U.S.C. 102(b) rejection of Claim 36 as being anticipated by Brinker et al (U.S. Patent No. 6,264,741 B1) and 35 U.S.C. 103(a) rejection of Claims 12 – 21, 23 – 25, 27 – 30 and 34 – 35 as being unpatentable over Brinker et al (U.S. Patent No. 6,264,741 B1) in view of Dams (European Patent No. 1225188), of record on page in the previous Action, have been considered but have not been found to be persuasive for the reasons set forth below.

Applicant argues, on page 7 of the remarks dated June 25, 2007, that the amendment reciting at least 100 layers of material to achieve the desired barrier property provides sufficient enablement.

However, as stated above, the phrase 'a total number of layers of organic polymer and layers of organic material is at least 100 so that the barrier film has a permeability to water vapor of less than about 0.01 $g/m^2/day$' is not disclosed in the original specification. The amendment therefore constitutes new matter. However, the new matter is considered in the new rejection above.

Applicant also argues on page 7 that the informality of Claim 27 is rendered moot by the amendment to Claim 12 regarding superhydrophobic material.

However, it is unclear what amendment is being referred to, and why the informality is rendered moot.

Applicant also argues on page 7 that the restriction of Claim 37 is improper because it recites all of the elements of Claim 12.

However, Claim 12 is not directed to a photovoltaic device that includes a barrier film at its surface having the elements.

Applicant also argues, on page 8, that Brinker et al disclose a poor moisture barrier film, because Brinker seeks to mimic nacre, which is not a water barrier.

However, a water barrier is not claimed, although a specific water permeability is claimed; furthermore, Brinker et al does not disclose a film that actually contains nacre.

Applicant also argues, on page 8, that there is no disclosure in Dams suggesting substituting alternating layers to contain superhydrophobic material; the traditional technique, as previously stated by the Office, Applicant argues, is to change the inorganic layer by increasing the amount of silicate.

However, as stated above, motivation for providing a coating containing superhydrophobic material is provided by Dams; furthermore it is unclear what previous statement by the Office, regarding the traditional technique, is being referred to.

Applicant also argues that the combination of Brinker et al and Dams does not result in the claimed invention, because Dams teaches only application to a hard surface.

However, Brinker et al clearly disclose application to a surface, because Brinker et al disclose a coating.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc A Patterson whose telephone number is 571-272-1497. The examiner can normally be reached on Mon - Fri 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Marc Patterson 5/10/07
Marc A. Patterson, PhD.
Primary Examiner
Art Unit 1772